

Undescribed Species of Crane-Flies from the Western United States and Canada (Dipt.: Tipulidae). Part IX

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The preceding part under this general title was published in ENTOMOLOGICAL NEWS 58: 205-209, 1947. The flies described herewith are from Colorado, derived from various sources, as discussed under the individual species.

Prionocera fulvicauda new species

Allied to *proxima*; mesonotal praescutum with four entire brown stripes, the intermediate pair separated by a pale line, only on the cephalic portion this more blackened; male hypopygium with the posterior border of tergite having three pairs of lobes, the lateral pair short, microscopically setulose; submedian lobes directed mesad, pointed at tips; third set of lobes small, provided with coarse setiferous tubercles; inner dististyle with the rostrum relatively stout, with from 10 to 12 blackened peg-like spines on lower margin near base.

♂. Length about 12 mm.; wing 13-14 mm.; antenna about 4 mm.

♀. Length about 17 mm.; wing 15 mm.

Frontal prolongation of head above black, including the nasus; ventral half yellow, becoming even clearer along the oral margin; mouthparts, including palpi, black. Antennae black, the apex of pedicel and base of first flagellar segment a trifle more reddened; proximal four flagellar segments with the lower apical angle slightly produced to give a serrate appearance; succeeding segments less evidently serrate. Head in front with a light silvery gray pruinosity, the pattern ending abruptly on the anterior vertex; dorsal portion of head with the central area of vertex infuscated, more intense medially and in the depressed areas behind the antennal bases; posterior orbits light gray, in cases more broadly so.

Pronotum gray, variegated medially with brown. Mesonotal praescutum gray, with four entire brown stripes, the intermediate pair separated by a short blackish line on the cephalic portion; on the posterior half or more the median vitta brownish gray, paler than the stripes; posterior sclerites of notum gray pruinose, scutal lobes vaguely patterned with brown; parascutella, posterior lateral portions of scutal lobes and the katepipleurotergite yellow, remainder of pleurotergite and the pleura light gray; dorsopleural membrane buffy yellow. Halteres with stem obscure yellow, knob infuscated. Legs with the coxae light gray pruinose, paling to yellow at tips; trochanters yellow; femora obscure yellow, the tips narrowly but conspicuously brownish black or black, less clearly delimited on the fore legs; tibiae light brown, the tips darker; tarsi passing into black; claws (male) toothed. Wings with a weak brownish tinge, the costal border, and especially cell *Sc*, more yellowed; stigma medium brown; oblitative streak before cord relatively conspicuous, extending from before the stigma almost to the posterior margin in cell M_3 ; veins dark brown, more brownish yellow in the brightened fields. Venation: *Rs* relatively long, nearly four times *m-cu*; basal section of vein M_4 elongate, perpendicular.

Abdominal tergites dark gray, with a broad dark brown median stripe, interrupted by the very narrow yellow posterior borders of the segments; lateral tergal borders much more broadly yellow; sternites dark gray, the posterior margins of the outer segments more broadly yellow; hypopygium chiefly fulvous, including the styli, outer tergal lobes and much of the sternite. Ovipositor with the elongate cerci slightly decurved. Male hypopygium with the ninth tergite transversely rectangular, the posterior margin generally truncate but conspicuously lobed; lateral lobes small, obtuse at tips, densely microscopically setulose; submedian lobes much longer, narrowed to acute points, on slide mounts directed mesad, enclosing a broadly transverse median notch; immediately behind these lobes a slightly smaller pair of darkened lobes, more obtuse at tips, similarly directed mesad, their surface with coarse setiferous tu-

bercles. Outer dististyle broadly expanded on proximal half or more, thence narrowed to the obtuse tip, the style broader in some specimens than in others. Inner dististyle with the rostrum elongate, a little expanded on outer portion; lower margin at the constricted part with about 10 to 12 small blackened peglike spines, just basad of this point with a small pale blade.

Habitat.—COLORADO. *Holotype*: ♂, Dream Lake, Rocky Mountain National Park, altitude 10,000 feet, July 18, 1941 (C. P. Alexander); not uncommon in a swale at outlet of lake. *Allotopotype*: ♀, pinned with type. *Paratopotypes*: 4♂♂.

The two species that require comparison are *Prionocera proxima* Lackschewitz and *P. unimicra* Alexander. The former occurs from northern and central Germany eastward to northern Korea, Amurland and Kamtchatka. It agrees with the present fly in the presence of blackened peglike spines on the inner dististyle, differing in all details of lobing of the ninth tergite, the more slender prolongation of the inner dististyle and in various colorational details. The Nearctic *unimicra* differs in the coloration of the head, antennae and other parts of the body, and in the structure of the male hypopygium. I am indebted to Dr. Henry K. Townes for a figure of the type of this species, showing the dorsal aspect of the ninth tergite. While the conformation of the lobes is somewhat the same, especially the lateral and submedian pairs, the third pair is much larger and directed caudad so as to appear on the profile of the posterior border.

Tipula (*Trichotipula*) *mulaiki* new species

Allied to *dorsolineata*; macrotrichia in cells of wing reduced to five or six in outer end of cell R_5 ; male hypopygium with the lateral lobes of the ninth tergite broad, the retrorse spinous setae not including the tips of the lobes; apex of inner dististyle only slightly produced; aedeagus of unusual length and stoutness, virtually as wide as the inner dististyle.

♂. Length about 12 mm.; wing 12.5 mm.

♀. Length about 14 mm.; wing 13 mm.

Described from alcoholic specimens. Frontal prolongation of head short, obscure yellow; nasus elongate; palpi brownish black. Antennae with basal two segments yellow; basal flagellar segments black, the remainder broken. Head above testaceous, the posterior vertex on either side with a major brownish spot.

Thorax chiefly brown, the dorsum with a conspicuous pale central stripe that extends the entire length of the mesonotum, a little narrowed on the scutum and mediotergite. Pleura obscure yellow, more or less variegated with brown. Halteres with stem pale, base of knob darker. Legs with the coxae brown; trochanters obscure yellow; femora yellow, the tips rather narrowly but conspicuously brownish black; tibiae obscure yellow, the tips even more narrowly darkened; tarsi obscure yellow basally, passing into black. Wings with a weak brownish tinge; stigma dark brown, conspicuous; cells *Sc* and *Cu*₁ paler brown but darker than the ground; a conspicuous whitish obliterative band across cell *1st M*₂, connecting with two narrow longitudinal streaks in cells *R* and *M* on either side of vein *M*, continued into cell *M*₃ almost to the outer margin, divided into two branches in the latter cell; similar double pale streaks in cells *R*₃, *R*₅, *M*₁, *2nd M*₂, *M*₄ and *1st A*; antestigmal and poststigmal brightenings present, the latter less distinct; veins brown. Five or six macrotrichia in outer end of cell *R*₅, lacking in the other cells; no stigmal trichia; no trichia on squama. Venation: *Sc*₁ preserved, erect; *Rs* shorter than the oblique *m-cu*, the latter connecting with vein *M*₄ beyond the base.

Abdominal segments brown, conspicuously variegated with paler, the bases of the segments broadly pale yellow, the posterior borders broadly brown, the latter color increasing in amount on the outer segments; in the male the pale color includes most of the mid-dorsum, continuing the pale median thoracic line; sternites more darkened on the sides. Male hypopygium having the caudal margin of the ninth tergite with a broad V-shaped notch, the margin with small blackened setae, those on the lobes stouter and retrorse, not reaching the

apex, as in *dorsolineata*. Inner dististyle nearly parallel-sided, gently narrowed outwardly, the beak only a little produced, slightly upturned; basal lobe large, oval, about one-half as long as the style. Aedeagus of unusual length and stoutness, at its widest point virtually as broad as the inner dististyle; in *dorsolineata* the aedeagus is much narrower, less than one-half as wide as the inner dististyle. The apex of the outer dististyle of the type male is broken and its full size and shape is still unknown.

Habitat.—COLORADO. *Holotype*: alcoholic ♂, Eggers, Poudre Canyon, Larimer Co., August 7, 1941 (S. & D. Mulaik). *Allotopotype*: alcoholic ♀, presumably taken while mating.

I am pleased to name this interesting species for Professor Stanley B. Mulaik, to whom I am indebted for several interesting western Tipulidae. The most similar species is *Tipula* (*Trichotipula*) *dorsolineata* Doane, which differs most evidently in the structure of the male hypopygium, especially the ninth tergite, inner dististyle, and aedeagus.

Tipula (*Lunatipula*) *sagittifera* new species

Belongs to the *unicincta* group; general coloration of body light gray, the praescutum with four narrow reddish brown stripes; femora obscure yellow, the tips brownish black, preceded by a more or less distinct clearer yellow ring; wings with a weak brownish tinge, restrictedly patterned with darker brown, including the stigma; obliterative areas before stigma and across the cord conspicuous; abdominal tergites light brown, the fourth tergite conspicuously darker; male hypopygium with the appendage of the ninth sternite a simple depressed cushion; phallosome with two pairs of rods and an additional unpaired median structure, the latter stout, sagittate, the triangular apex subtended on either side by a slender spine; eighth sternite with a single major fasciculate bristle, the inner median group of setae only slightly modified, their tips produced into long filaments.

♂. Length about 17 mm.; wing 18.5 mm.; antenna about 4.1 mm.

Frontal prolongation of head yellow, light gray pruinose at base above; nasus small; palpi brownish black, the incisures restrictedly whitened. Antennae with scape and pedicel yellow, the latter somewhat paler; flagellum brownish black, the segments moderately incised; longest verticils exceeding the segments in length. Head above very light gray, the vertex with a capillary brown median vitta; setae of vertex black and very conspicuous against the ground, rising from slightly darkened punctures.

Pronotum gray, vaguely patterned with darker. Mesonotum light gray; praescutum with four narrow reddish brown stripes, the intermediate pair longer, somewhat constricted to nearly interrupted at near midlength; pseudosutural foveae pale; each scutal lobe with a major reddish area. Pleura and pleurotergite light gray, the ventral sternopleurite slightly darker; dorso-pleural membrane yellow. Halteres with stem pale yellow, especially at base; knob infuscated, the apex narrowly whitened. Legs with the coxae light gray; trochanters yellow; femora obscure yellow, the tips brownish black, the amount subequal on all legs, on the fore pair including about the outer tenth, the black tips preceded by a vaguely clearer yellow ring; tibiae brownish yellow, the tips narrowly brownish black; tarsi light brown, the outer segments darker; claws (male) toothed. Wings with a weak brownish tinge; stigma darker brown; small and inconspicuous brown spots at end of vein *Sc* and over the anterior cord; *m-cu* and distal section of vein *Cu* vaguely seamed with brown; obliterative areas before stigma, before cord and across cell *1st M*₂ into base of cell *M*₃ conspicuous; no post-stigmal brightening; vague pale areas in the centers of cells *M*₁, *2nd M*₂, *M*₃ and *M*₄, near outer end of cell *1st A* adjoining vein *2nd A* and as a more extensive brightening beyond arculus in cells *R* to *1st A*; veins brown. Venation: *Rs* about twice *m-cu*; *R*₁₊₂ entire; cell *1st M*₂ relatively small.

Abdominal tergites light brown, variegated with paler, the fourth tergite conspicuously darker brown, as in this subgroup of species; sternites clearer yellow; hypopygium chiefly brownish yellow. Male hypopygium with the lateral lobes of the ninth

tergite relatively narrow, the subacute tips gently divergent; outer third of lobe without setae, transversely wrinkled. Ninth sternite with its appendage appearing as a large but low and compact cushion, the entire lower face appressed to the sternite; all but the dorsal end of the cushion provided with abundant long yellow setae but with no spinous points. Basistyle immediately above the appendage of the ninth sternite produced into a sclerotized flattened blade, densely provided with microscopic setulae; a lateral flange provided with a short row of long conspicuous setae. Outer dististyle with the blade very broad. Inner dististyle with the beak slender; lower beak an obtusely rounded blackened head; posterior crest of style long-extended, its margin hyaline, microscopically toothed. Phallosome including two pairs of rods and an additional unpaired element; largest paired blades unusually broad, the outer apical angle further produced into a long reddish spine, the inner apical angle obtusely rounded; inner paired blades much smaller; unpaired phallosomic element distinctive, stout, terminating in a triangular head, the lateral region at base of head produced into a slender spine on either side. Eighth sternite with a single major lateral seta, this from a short basal tubercle, completely fasciculate but evidently comprised of several elements; at its base a very much smaller fasciculate seta and two or three additional long normal ones; inner median group of bristles relatively numerous, flattened, their tips extended into long pale filaments; outer median cushion transverse, its outer edge very gently convex.

Habitat.—"COLORADO AND MONTANA." *Holotype*: ♂, without further geographical data and the state thus uncertain; July 6, 1926 (H. G. Dyar); United States National Museum. It is unfortunate that the type locality is not more certain.

The most similar described species of the *unicincta* group that have an unpaired median phallosomic element include *Tipula* (*Lunatipula*) *bigeminata* Alexander, *T. (L.) diacanthophora* Alexander, and *T. (L.) spatha* Doane. The present fly differs from these in the details of structure of the male hypopygium, including the tergite, appendage of the ninth sternite, phal-

losome, and the eighth sternite. In *diacanthophora*, the very modified inner group of setae of the eighth sternite are entirely different. Dr. Alan Stone has compared the present fly with the holotype specimen of *bigeminata* and indicates that the latter differs in the characters of the tergal lobes and their vestiture, the narrower outer dististyle, and the phallosome, including the longer paired rods, which are elongate and parallel to one another, and in the unpaired median element which is deeply forked.

Two Migrations of the Snout Butterfly, *Libytheana bachmanii larvata* (Strecker). (Lepidoptera: Libytheidae)

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The butterfly discussed in this paper has had the misfortune of having its name changed several times during the past few years. In fact, the family Libytheidae was for a long time considered as a subfamily of the Nymphalidae, although today most workers consider the group to be a separate family.

In older publications, before the species *bachmanii* was divided into subspecies, the species was referred to the genus *Hypatus*. From about 1934 until 1943, *bachmanii* was included in the genus *Libythea* (Michener 1943). In 1938, Field divided *Libythea bachmanii* Kirkland into two subspecies, *L. bachmanii bachmanii* Kirkland, and *L. bachmanii larvata* (Strecker).

Michener (1943) erected the genus *Libytheana* for the American species of *Libythea* which differ markedly from the European forms. The butterfly under discussion is at present recognized as *Libytheana bachmanii larvata* (Strecker). Its general distribution includes the southwestern United States and possibly parts of Mexico (Field 1938; Michener 1943). The general distribution of the other subspecies, *L. bachmanii bachmanii* Kirkland, is the eastern United States.

¹ The writer greatly appreciates the determination of the butterfly by William D. Field.